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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/533,203	03/23/2000	Christopher R. Fairley	81208	9731

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EXAMINER

SPEARS, ERIC J

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 03/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/533,203

Applicant(s)

FAIRLEY ET AL.

Examiner

Eric J Spears

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

The cancellation of Claim 21 is acknowledged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 12-14, 16, 18, 20, 22, 24, 27, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Vaught et al. (5,264,912).

Regarding Claim 12, Vaught teaches a specimen inspection system, comprising: a light energy source 512; a multiple element arrangement 510, 516 for receiving energy from said energy source and selectively passing the light energy received; a lensing arrangement 502 for measuring and canceling topographical variations during inspection; and a pinhole mask 506 for filtering light energy received from said lensing arrangement, and a TDICCD device 507 (see abstract).

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Regarding Claim 13, Vaught teaches wherein said lensing arrangement receives light energy from said multiple element arrangement and imparts light energy onto a specimen (See Fig. 5).

Regarding Claim 14, Vaught teaches wherein said lensing arrangement further transmits light energy reflected from said specimen to said pinhole mask (See Fig. 5).

Regarding Claim 16, Vaught teaches wherein said light energy source comprises an arc lamp (See Col. 8, lines 61-68) and said multiple element arrangement comprises a pinhole array 510, 516.

Regarding Claim 18, Vaught teaches a multiple element arrangement made up of a plurality of lenses 509 and 511.

Regarding Claim 20, Vaught teaches wherein said lensing arrangement comprises: a first lens in 502; a transmitter/reflector 508; an objective in 502; and a tube lens in 502.

Regarding Claim 22, Vaught teaches wherein said pinhole mask 506 is mounted adjacent to a time delay and integration charge coupled device 507 (See Fig. 5).

Regarding Claim 24, Vaught teaches a system for inspecting a semiconductor wafer specimen, comprising: illumination means for generating light energy 512; multiple element passing means 510, 516 for selectively filtering and passing energy received from said illumination means; lensing means 502, 508 for imparting light energy onto said semiconductor wafer specimen; masking means 506 for further selectively filtering and passing energy received from said lensing means; and a time

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delay and integration charged coupled device 507 for receiving light energy from said masking means.

Regarding Claim 27, Vaught teaches Vaught teaches wherein said light energy source comprises an arc lamp (See Col. 8, lines 61-68) and said multiple element arrangement comprises a pinhole array 510, 516.

Regarding Claim 31, Vaught teaches wherein said lensing arrangement comprises: a first lens in 502; a transmitter/reflector 508; an objective in 502; and a tube lens in 502.

Claim 32 is rejected under 35 U.S.C. 102(e) as being anticipated by Bishop (6,091,488).

Regarding Claim 32, Bishop teaches a method for inspecting a specimen, comprising the steps of generating light energy by laser 1; selectively filtering and passing energy received from said laser 1 using a multiple element arrangement 3, 5; imparting light energy onto said specimen using elements 1 and mirror; further selectively filtering and passing energy reflected from said specimen (See Fig. 7); and performing a time delay and integration sensing function on light energy received from said further selectively filtering step (See Fig. 7).

Claim Rejections - 35 USC § 103

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Claims 1, 2, 4-12, 15, 17, 19, 24-26, 28-30, 32, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerstens et al. (5,248,876) in view of Bishop (6,091,488).

Regarding Claim 1, Kerstens teaches a system for inspecting a specimen, comprising: a light energy source 400 (Figs 11, 12); a multiple element arrangement for receiving light energy from said light energy source 404, 406, 301 (Figs 11, 12); a lensing/imaging arrangement 106 108 (Fig. 11) for receiving light energy from said multiple element arrangement and imparting said light energy to said specimen 112 (Fig. 11); a pinhole mask (306, 321; Fig. 11) for receiving light energy reflected from said specimen through said lensing arrangement and selectively passing said reflected light energy; and detector array 114 (Fig. 11) for receiving light energy from said pinhole mask.

Further regarding Claim 1, Kerstens does not teach the detector array being a time delay and integration charge coupled (TDICCD) device. However, Bishop teaches an optical inspection device using a TDICCD (See Fig. 7, See abstract). Therefore, it would have been obvious to one of ordinary skill in the art to provide a time delay and integration charge coupled device in the device of Kerstens, as such devices are well known in the art as shown by Bishop, in order to enable scanning at high speeds without obtaining blur (Col. 6, lines 4-7).

Regarding Claims 2 and 11, the modified device of Kerstens teaches the multiple element arrangement comprises a fly lens array 404. The modified device of Kerstens does not explicitly teach the type of light source. However, Bishop teaches using lasers

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as a light source. Moreover, Kerstens teaches taking images in different spectral bands simultaneously (See Fig. 15). Therefore, it would have been obvious to one of ordinary skill in the art to provide a laser emitting at two frequencies in the modified device of Kerstens, as the use of lasers is well known in the art as shown by Bishop, in order to defects of different reflective natures.

Further regarding Claim 11, the modified device of Kerstens does not teach a slit laser. However, Bishop teaches a slit laser (Col. 8, lines 7-11). Therefore, it would have been obvious to one of ordinary skill in the art to provide slit lasers in the modified device of Kerstens, as such slit lasers are well known in the art as shown by Bishop, in order to enable linear scanning.

Regarding Claim 4, the modified device of Kerstens teaches a beam expander 402 (Fig. 12) which receives light energy from said light source and expands light energy toward said multiple element arrangement. The modified device of Kerstens does not explicitly teach the type of light source. However, Bishop teaches using lasers as a light source. Therefore, it would have been obvious to one of ordinary skill in the art to provide a laser in the modified device of Kerstens, as the use of lasers is well known in the art as shown by Bishop, as an obvious design choice in order to provide a light source with a specific frequency range.

Regarding Claim 5, the modified device of Kerstens teaches said fly lens arrangement comprises a plurality of offset individual lenses (see Fig. 12).

Regarding Claim 6, the modified device of Kerstens teaches said fly lens arrangement is substantially aligned with respect to the pinhole mask (see Fig. 12).

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Regarding Claim 7, the modified device of Kerstens teaches a transmitter/reflector 106, an objective 108, and a tube lens 308. Kerstens does not teach the first lens. However, it would have been obvious to one of ordinary skill in the art to provide an additional lens, since it has been held that mere duplication of the essential working parts of an invention requires only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Regarding Claim 8, the modified device of Kerstens teaches said lensing/imaging arrangement comprises autofocus capability (Col. 5, lines 6-19; Fig. 1).

Regarding Claim 9, the modified device of Kerstens teaches said pinhole mask is mounted adjacent to said time delay and integration charge coupled device (Col. 10, lines 3-10).

Regarding Claim 10, the modified device of Kerstens teaches said a focusing lens 308.

Regarding Claim 12, Kerstens teaches a specimen inspection system, comprising: a light energy source 400; a multiple element arrangement for receiving energy from said energy source and selectively passing the light energy received 404, 406; a lensing arrangement 106, 108, 119 comprising an autofocus system for measuring and canceling topographical variations during inspection; and a pinhole mask 306, 321 for filtering light energy received from said lensing arrangement; and detector array 114 (Fig. 11) for receiving light energy from said pinhole mask.

Further regarding Claim 12, Kerstens does not teach the detector array being a time delay and integration charge coupled (TDICCD) device. However, Bishop teaches

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an optical inspection device using a TDICCD (See Fig. 7, See abstract). Therefore, it would have been obvious to one of ordinary skill in the art to provide a time delay and integration charge coupled device in the device of Kerstens, as such devices are well known in the art as shown by Bishop, in order to enable scanning at high speeds without obtaining blur (Col. 6, lines 4-7).

Regarding Claim 15, the modified device of Kerstens teaches the multiple element arrangement comprises a fly lens array 404. The modified device of Kerstens does not explicitly teach the type of light source. However, Bishop teaches using lasers as a light source. Therefore, it would have been obvious to one of ordinary skill in the art to provide a laser in the modified device of Kerstens, as the use of lasers is well known in the art as shown by Bishop, in order to provide a light source of narrow frequency range.

Regarding Claim 17, the modified device of Kerstens teaches a beam expander 402 (Fig. 12) which receives light energy from said light source and expands light energy toward said multiple element arrangement. The modified device of Kerstens does not explicitly teach the type of light source. However, Bishop teaches using lasers as a light source. Therefore, it would have been obvious to one of ordinary skill in the art to provide a laser in the modified device of Kerstens, as the use of lasers is well known in the art as shown by Bishop, as an obvious design choice in order to provide a light source with a specific frequency range.

Regarding Claim 19, the modified device of Kerstens teaches said fly lens arrangement is substantially aligned with respect to the pinhole mask (see Fig. 12).

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Regarding Claim 24, Kerstens teaches a system for inspecting a semiconductor wafer specimen, comprising: illumination means 400 for generating light energy; multiple element passing means 404, 406 for selectively filtering and passing energy received from said illumination means; lensing means 106, 108 for imparting light energy onto said semiconductor wafer specimen; masking means 306, 321 for further selectively filtering and passing energy received from said lensing means; and detector array 114 (Fig. 11) for receiving light energy from said pinhole mask.

Further regarding Claim 24, Kerstens does not teach the detector array being a time delay and integration charge coupled (TDICCD) device. However, Bishop teaches an optical inspection device using a TDICCD (See Fig. 7, See abstract). Therefore, it would have been obvious to one of ordinary skill in the art to provide a time delay and integration charge coupled device in the device of Kerstens, as such devices are well known in the art as shown by Bishop, in order to enable scanning at high speeds without obtaining blur (Col. 6, lines 4-7).

Regarding Claim 25, the modified device of Kerstens teaches an autofocus means 119.

Regarding Claim 26, the modified device of Kerstens teaches the multiple element arrangement comprises a fly lens array 404. The modified device of Kerstens does not explicitly teach the type of light source. However, Bishop teaches using lasers as a light source. Therefore, it would have been obvious to one of ordinary skill in the art to provide a laser in the modified device of Kerstens, as the use of lasers is well

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known in the art as shown by Bishop, in order to provide a light source of specific frequency.

Regarding Claim 28, the modified device of Kerstens teaches a beam expander 402 (Fig. 12) which receives light energy from said light source and expands light energy toward said multiple element arrangement. The modified device of Kerstens does not explicitly teach the type of light source. However, Bishop teaches using lasers as a light source. Therefore, it would have been obvious to one of ordinary skill in the art to provide a laser in the modified device of Kerstens, as the use of lasers is well known in the art as shown by Bishop, as an obvious design choice in order to provide a light source with a specific frequency range.

Regarding Claim 29, the modified device of Kerstens teaches the fly lens is a plurality of offset lenses (See Fig. 12).

Regarding Claim 30, the modified device of Kerstens teaches said fly lens arrangement is substantially aligned with respect to the pinhole mask (see Fig. 12).

Regarding Claim 32, Kerstens teaches a method for inspecting a specimen, comprising the steps of generating light energy with element 400; selectively filtering and passing energy received from said illumination means using a multiple element arrangement 404, 406; imparting light energy onto said specimen; further selectively filtering and passing energy reflected from said specimen 112; and receiving light energy from said further selectively filtering step with detector array 114.

Further regarding Claim 32, Kerstens does not teach the detector array being a time delay and integration charge coupled (TDICCD) device. However, Bishop teaches

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an optical inspection device using a TDICCD (See Fig. 7, See abstract). Therefore, it would have been obvious to one of ordinary skill in the art to provide a time delay and integration charge coupled device in the device of Kerstens, as such devices are well known in the art as shown by Bishop, in order to enable scanning at high speeds without obtaining blur (Col. 6, lines 4-7).

Regarding Claim 33, the modified device of Kerstens teaches an autofocus using element 119 (Col. 5, lines 6-19).

Claims 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerstens et al. (5,248,876) in view of Bishop (6,091,488) and further in view of Applicant's Admitted Prior Art.

Regarding Claim 3, the modified device of Kerstens teaches multiple element arrangement comprises a pinhole array 301 or 406 (Figs 11, 12). The modified device of Kerstens does not teach the light source being an arc lamp. However, Applicant admits that arc lamps have been used in place of lasers in inspection devices (Spec. Page 3, lines 1-5). Therefore, it would have been obvious to one of ordinary skill in the art to provide an arc lamp in the device of modified device of Kerstens, as such arc lamps are well known in the art, in order to avoid the expense of providing a more expensive light source as the light source.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vaught et al. (5,264,912).

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Regarding Claim 23, Vaught does not teach the device further comprising a focusing lens, wherein said focusing lens receives light energy from said pinhole mask and focuses light energy onto said time delay and integration charge coupled device. However, it would have been obvious to supply a lens for focusing light onto the TDI sensor 507, since it has been held that mere duplication of the essential working parts of a device requires only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Spears whose telephone number is (703) 306-0033. The examiner can normally be reached on Monday-Friday from 10:00am to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (703) 308-4852. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

EJS
03/21/03



STEPHONE ALLEN
PRIMARY EXAMINER